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## एल्पाइन स्कीस — स्की बाध्यकारी पेंच

भाग 1 आवश्यकताएँ

( पहला पुनरीक्षण )

## Alpine Skis — Ski Binding Screws

Part 1 Requirements

( First Revision )

ICS 97.220.20

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## NATIONAL FOREWORD

This Indian Standard (First Revision) has been adopted by the Bureau of Indian Standards after the draft finalized by the Mountaineering and Adventure Sports Sectional Committee had been approved by the Production and General Engineering Division Council.

This standard was originally published in 1984 based on ISO 6004 : 1981 'Alpine skis — Ski binding screw requirements'. The first revision of this standard has been undertaken to align it with the latest national and international manufacturing practices.

The major changes in this revision are as follows:

- a) normative references (2) are updated;
- b) designation has been updated; and
- c) typical application characteristics have been updated.

This Indian Standard is published in two parts. The other part in this series is:

### Part 2 Test methods

The use of ski binding screws complying with the requirements of this standard will improve the mounting. By standardizing the drill hole diameter, recommendations by the manufacturers will no longer be required and mistakes and improper mounting caused by differences in instructions, will be avoided. Also, standardization of the penetration depth will enable ski manufacturers to design their products such that there will be sufficient thickness in the mounting area, and will facilitate the proper location of reinforcement parts to make optimum use of the fastening characteristics.

The proposed values for driving torque and stripping torque will enable adjustable torque- limiting screwdrivers to be used with the same adjustment for all Skis. The use of the cross recess no. 3 screw also contributes significantly to a considerable simplification of the binding mounting procedure.

While preparing this standard, considerable assistance has been derived from ISO 6004 : 1991 'Alpine skis — Ski binding screw requirements'

The composition of the Committee, responsible for the formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# *Indian Standard*

## ALPINE SKIS — SKI BINDING SCREWS

### PART 1 REQUIREMENTS

(*First Revision*)

#### 1 SCOPE

**1.1** This standard (Part 1) specifies the dimensions, mechanical properties and fastening characteristics of screws used for mounting ski bindings to Alpine skis.

**1.2** The purpose of this standard is to aid the design of a more rational and safer binding mounting system.

#### 2 REFERENCES

**2.1** The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. In case, the standards are to be referred in this clause they are to be listed as follows:

<i>IS No.</i>	<i>Title</i>
1367 (Part 11) : 2002	Technical supply conditions for threaded steel fasteners: Part 11 Electroplated coatings ( <i>third revision</i> )
11042 (Part 2) : 2019	Alpine skis — Ski binding screws: Part 2 Test methods
5957 : 2003	Screw threads for thread forming tapping screws — Dimensions ( <i>second revision</i> )
7178 : 2018	Heat-treated steel tapping screws — Mechanical properties ( <i>fourth revision</i> )
7478 : 2011	Cross recesses for screws ( <i>second revision</i> )

#### 3 DEFINITIONS

For the purpose of this standard, the following definitions shall apply.

**3.1 Ski Binding Screw** — A fastener, which after mounting, ensures the connection of binding and ski by axial pre-tension.

**3.2 Penetration Depth** — The distance from the top surface of the ski to the lower extremity of the ski binding screw.

**3.3 Driving Torque** — The maximum value of the moment required to drive the ski binding screw into the drill hole of the ski or test specimen.

**3.4 Tightening Torque** — The moment, specified in the mounting instructions or in the test procedure, which is used to tighten the ski binding screw to ensure sufficient fastening.

**3.5 Stripping Torque** — The maximum measurable moment which causes damage to the internal thread in the ski or the test specimen, or to the thread of the screw if the already tightened screw is further loaded by a driving moment.

**3.6 Static Pull-out Resistance** — The resistance of the ski or test specimen to a pull-out force applied quasistatically in the axial direction.

#### 4 REQUIREMENTS

The strength requirements and typical application characteristics shall be tested according to IS 11042 (Part 2).

##### 4.1 Materials

Any material complying with the requirements of **4.3** and **4.4** may be used (e.g. case hardened or heat treated steel according to IS 7178).

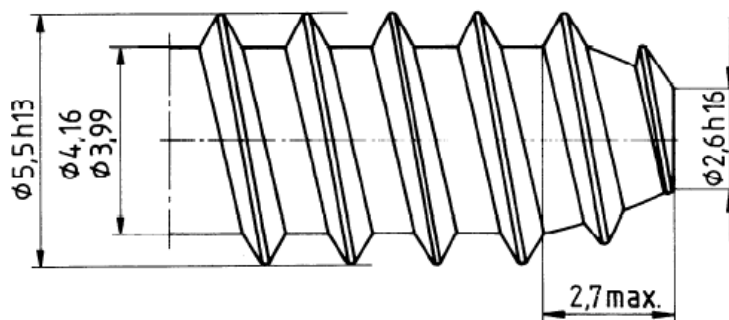
##### 4.2 Dimensions

###### 4.2.1 Screw Head

Ski binding screws shall be having a maximum head diameter of 10 mm and be cross recess type no. 3 with a recommended minimum penetration depth of 2.72 mm to 3.18 mm (*see* IS 7478). If screws having countersunk heads are used, the angle of countersinking shall be  $90^{\circ} \pm 2^{\circ}$ .

###### 4.2.2 Thread and End Configuration

Within the maximum major diameter of 5.5 mm according to Fig. 1 the cross-section of the screw may be circular or non-circular. The tolerance on the outer diameter shall be h13. The tolerance on the total length of the screw shall be  $\pm 0.5$  mm.



All dimension in millimeter

FIG. 1 THREAD AND END CONFIGURATION

**4.2.2.1** Irrespective of the shaft length, the thread length shall be at least 1 mm longer than the penetration depth.

#### 4.2.2.2 Shaft end

The shaft end shall correspond to Fig. 1. The diameter of the tip shall be 2.6 mm, tolerance h16.

### 4.3 Surface

Ski binding screws shall be coated or plated with materials which provide adequate protection against corrosion and ensure a reproducible coefficient of friction.

**4.3.1** A suitable coating meeting the above requirement would be a zinc electroplated coating, Fe/Zn 5 [see 1367 (Part 11) : 2002], having a clear chromate conversion coating and a local thickness of 5  $\mu\text{m}$  (batch average 4  $\mu\text{m}$  Min, 6  $\mu\text{m}$  Max), when measured on the top surface of the screw head. During electroplating, adequate precautions shall be taken to avoid hydrogen embrittlement.

### 4.4 Strength Requirements

**4.4.1** The breaking moment for ski binding screws under a torque of the same axis and direction as driving torque shall be not less than 10 N.m.

**4.4.2** When subjected to the ductility test, screws shall not break.

### 4.5 Typical Application Characteristics

The specified fastening and mounting characteristics of the screw are based on a uniform drill diameter of 4.1 mm H12.

#### 4.5.1 Mounting Characteristics

In the tests, the screw shall obtain the following values without damage to the screw head:

Driving torque	3.3 N.m Max.
Stripping torque	5 N.m Min.

#### 4.5.2 Fastening Characteristics

The mean static pull out resistance shall correspond to at least that of a reference screw complying with the requirements of Type B of IS 5957 and having a diameter of 5.5 mm, a thread pitch of 1.81 mm and symmetrical flank angle of 60°.

## 5 DESIGNATION AND MARKING

Ski binding screws shall be designated by:

- the words 'Ski Binding Screws' and the abbreviation 'SBS';
- the nominal dimensions : diameter (mm)×length (mm);
- the reference to this Indian Standard; and
- the type of screw head.

For example:

Ski binding screws of nominal diameter 5.5 mm and length 12 mm, with countersunk heads would be designated as:

Ski Binding Screws SBS 5.5 × 12 IS 11042 (Part 1) with countersunk head.

## 6 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## ANNEX A

(Foreword)

## COMMITTEE COMPOSITION

Mountaineering and Adventure Sports Sectional Committee, PGD 27

<i>Organization</i>	<i>Representative(s)</i>
Indian Mountaineering Foundation, New Delhi	WG CDR AMIT CHOWDHURY ( <i>Chairman</i> )
Atal Bihari Vajpayee Institute of Mountaineering and Allied Sports, Manali	DIRECTOR
Border Security Force, New Delhi	SHRI PREM VISHWAS IG TRAINING ( <i>Alternate</i> )
Defence Materials and Stores Research and Development Establishment, Kanpur	DIRECTOR
Defence Metallurgical Research Laboratory, Ministry of Defence, Hyderabad	DR T. RAGHU MR VENKATA RAMANA ( <i>Alternate</i> )
Defence Research Development Organization, Ministry of Defence, New Delhi	SHRI R. SHANKAR
Defense Research and Development Organization, Snow and Avalanche Study Establishment, Chandigarh	DIRECTOR
Directorate General of Quality Assurance, Ministry of Defence, New Delhi	M. SATYANARAYANA SHRI M. V. KUMBHALKAR ( <i>Alternate</i> )
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Gipfel Climbing Pvt Ltd, Meerut	APAR MAHAJAN
High Altitude Warfare School, Gulmarg, J & K	THE COMMANDANT
Himalayan Mountaineering Institute, Darjeeling	GP CAPT JAIKISHAN CAPT MOHAMED FASITH ( <i>Alternate</i> )
Indian Mountaineering Foundation, New Delhi	SHRI HARISH JOSHI SUDHIR KRISHNANKUTTY ( <i>Alternate</i> )
Indo Tibetan Border Police, New Delhi	THE COMMANDANT
Jawahar Institute of Mountaineering and Winter Sports, Pahalgam	PRINCIPAL
Karam Industries, Noida	SHRI MOHAMMAD SHRI SANJIV SHARMA ( <i>Alternate</i> )
Kohinoor Ropes Pvt Ltd, Aurangabad	SUNIL BIHANI VINAY CHANDAK ( <i>Alternate</i> )
Master General Ordnance Branch, New Delhi	CHIEF EXECUTIVE OFFICER
Motilal Dulichand Pvt Ltd, Kanpur	SHRI SHAILENDRA MISRA SHRI SUNIL PRAHLADKA ( <i>Alternate</i> )
Mountaineering and Skiing Institute (M & SI), Auli	BRIG YASHPAL SINGH (RETD) BALWINDER SINGH ( <i>Alternate</i> )
National Test House, Kolkata	AVINASH KUMAR
Nehru Institute of Mountaineering, Uttarkashi	PRINCIPAL
Northern India Textile Research Association, Ghaziabad	MRS NEHA KAPIL DR M. S. PARMAR ( <i>Alternate</i> )
Outdoor School, New Delhi	SHRI MOHIT OBEROI

**IS 11042 (Part 1) : 2022**

<i>Organization</i>	<i>Representative(s)</i>
R K Enterprises, Faridabad	SHRI LALIT NAGPAL SHRI RAJA RAM PRASAD ( <i>Alternate</i> )
Safety Appliances Manufacturer's Association, Mumbai	SHRI NATWAR BAGRI AVNEET ANTOORKAR ( <i>Alternate</i> )
Sagar Asia Pvt Ltd, Secunderabad	MS T. ANITHA PRASAD
Sonam Gyatso Mountaineering Institute, Gangtok	PRINCIPAL
Swami Vivekanand Institute of Mountaineering, Mount Abu	PRINCIPAL
Thanawala and Company, Mumbai	SHRI HEMAL M. THANAWALA
The Synthetic and Art Silk Mills Research Association, Mumbai	DR MANISHA MATHUR SHRIMATI A. SUDAM ( <i>Alternate</i> )
Trekko Equipment, New Delhi	SHRI NAGESH SETHI
In Personal Capacity	COL H. S. CHAUHAN
In Personal Capacity	COL A. B. GOTH
In Personal Capacity	BRIG K. KUMAR
BIS Director General	SHRI NAVINDRA GAUTAM, SCIENTIST 'E' AND HEAD (PGD) [REPRESENTING DIRECTOR GENERAL ( <i>Ex-officio</i> )]

*Member Secretary*

SHRI KUNDAN GIRI  
SCIENTIST 'C' (PGD), BIS



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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- [www.bis.gov.in](http://www.bis.gov.in) or [www.standardsbis.in](http://www.standardsbis.in).

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### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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